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Abstract:

This paper reports on qualitative research that investigates the culture of survival among entrepreneurial UK games software development firms within the interactive entertainment industry. The survival culture depicts a culture where firms strive for cost efficiency in order to maximize their chance of continued operation. In-depth interviews with 12 managers illustrated a framework for understanding the cost advantages of surviving firms. It was found it was based on focusing on human relations, building critical inter-firm relationships and acknowledging the importance of cash flow, which were in turn supported by innovative product orientation. The analysis highlights that competitiveness within the interactive entertainment industry could be attained within market constraint and pressure.

Key words:

Firm culture, competition and the interactive entertainment industry.

Culture and the Survival of UK independent Games Software Firms

Introduction

The survival of a firm relates to the continuity of operations after its entrance into a given industry, and can be considered as an indicator of performance since successful firms with growth in sales, market shares, return on investment and competitive positions are likely to continue their business operations. Indeed, Stigler (1950 pp.23-4) stated that survival was the only test of a firm's ability to cope with essential activities such as 'buying inputs, soothing laborers, finding customers, introducing new products and techniques, coping with fluctuations, evading regulations, etc.' Recent researchers such as Mitchell et al. (1992) have used survival as indicator of performance.

Firms cease to survive due to merger, voluntary closure, insolvency, or disposal. Although selling off an unsuccessful firm is common in the manufacturing industry, it is not viable for unsuccessful knowledge based firms with no possession of intellectual property; the absence of significant fixed assets such as plants and machinery coupled with the lack of valuable patents, trademarks and copyrights means that there will probably be a lack of potential buyers. Nevertheless, it should be noted that conceptualizing a disposal or merger as the failure of firms to survive can be misleading as disposal or merger might represent the exit strategy pursued by founder-managed entrepreneurial firms with successful performance.

A variety of factors could explain the survival of firms in globally competitive industries, which could be distinguished between firm-specific, industry-specific and nation-specific determinants. Nation-specific factors refer to the institutional framework that firm operates, and include the national government's subsidies to new firms or state-

owned banks' loans to unsuccessful firms enabling them to continue their business operations. The industry life cycle proposed by evolutionary economists, on the other hand, provides an industry-specific explanation of firm survival. It argues that industries exhibit life cycles such as an emergent stage, a growth stage and a shake-out stage during their development. For instance, when industry capacity exceeds the demand of the market, only the more capable firms will be able to survive. Parallel to the notion of the industry life cycle, the dominant technology perspective suggests that the chance for firms to survive is usually lower during the period after the dominant firm's launch of industry standard; however, as the industry further matures, it is possible for small firms to co-exist with leading firms. The industry determinant of the survival of firms is therefore intrinsically linked to the supply and demand conditions in the industry. Moreover, firm strategy as in the context of generalist-specialist, innovation-imitation or high-low debt to asset ratio is considered as important when discussing the issue of survival among new firms. Finally, it has been suggested that firm age, status of ownership and firm capability will determine the survival of individual firms.

Though existing literature has examined the survival of firms at the macro and micro level, it has focused on the visible or formal aspects of the firms and the environments they operate in and ignored the softer aspect of firm culture. An early definition of firm culture can be seen in Jaques' (1952) work: he stated that culture was the 'customary and traditional way of thinking and doing of things, which is shared to a greater or lesser degree by all its members, and which new members must learn, and at least partially accept, in order to be accepted into service in the firm'. Since then, theorists such as Andrew Pettigrew, Geert Hofstede, Edgar Schein, Linda Smircich,

Harrison Trice, Janice Beyer and Sonja Sackmann have further developed the concept in terms of certain commonalities among members of firms. Overall, firm culture can be seen as a set of shared assumptions that enable members of a firm to understand its various functioning.

This paper aims to further our understanding of firm culture by exploring its influence on the survival of firms, which is an indicator of performance in globally competitive knowledge-based industry such as interactive entertainment. In their in-depth study of the cultural paradigm of small manufacturing firms in Scotland, Haugh and McKee (2004) observed the values of survival among four firms in Caledonia. Their empirical study showed that business survival and the desire for longer-term survival were important throughout all participating firms since it provided employment for founder managers' family members and firm employees. This paper focuses on the survival culture, which is a firm culture emphasizing on cost efficiency in order to continue business operations. It examines the survival culture of entrepreneurial firms created and managed by founders within the setting of the UK interactive entertainment industry, and drew on data deriving from 27 face-to-face interviews with games development firms, games publishing firms and games software related firms. The definition of entrepreneurial firms is firms that are partially or wholly owned by their founders; moreover, the founders of these firms hold significant operational positions.

The UK-based games software development firms can be classified into large-sized multinational firms' divisions as well as small and medium-sized independent, entrepreneurial firms. I will focus on the latter as their survival is influenced directly by performance rather than the strategic orientation of headquarters. As an industry

participant pointed out, the major characteristic of being an independent firm is that, ‘you have to produce, sell and service customers’, whereas, ‘as a studio within a larger entity, you have corporate objectives to meet.’ Indeed, the largest games software multinational firms Electronic Arts, Ubisoft and Sony employ between 2,000 and 5,000 games development professionals across different locations while medium-sized UK firms employ about 100 employees. The chosen time frame of the games software industry is from 1980 to 2006, which incorporates its growth during the 1980s and the 1990s as well as the recent consolidation. Indeed, the total number of games development firms within the UK has decreased from approximately 500 in 2000 to 200 in 2007 despite the increase in total sales revenues. The surviving firms, however, are globally competitive and therefore are worth studying. As one of the surviving firms stated, ‘the very necessity to survive and prosper’ was a driving force for it to be more creative and to be good at management. Hence, this paper looks at one of the leading export-oriented industries in the UK economy at its critical conjecture.

This paper consists of four sections. In the next section, I introduce the industry context of the paper, using primarily data collected during interviews with the interactive entertainment firms. Then I outline the theoretical perspectives in relation to the survival culture among independent games software firms. I will then discuss the research methodology adopted in this paper for examining the relationship between survival culture and continuity of independent games software firms’ operations in the UK. I will then illustrate the competitive advantages of the culture of survival among these firms. The final section offers some conclusions.

Software Games and Interactive Entertainment

The interactive entertainment industry, which encompasses games software in relation to games consoles, personal computers, digital television, internet and mobile phones, generated over US$41.9 billion of sales revenue in 2007 (PWC 2008). Currently, the games console Playstation is the leading platform among gamers where Sony has sold some 40 million Playstation 2 in Europe in 2006. Exhibit 1 contrasts the size of leading multinational firms and independent UK games development firms. It can be seen that multinational games publishers such as Sony, Microsoft and Vivendi Universal involved in games development are significantly larger than UK developers.

Insert Exhibit 1 here

The development cycle of games varies across the platform and the nature of projects. The creation of original games requires a longer time than the format conversion of games as well as the development of license based games. Besides, the development of console games requires larger team size and longer production time than that of mobile games. The cost of developing a game for mobile phones, which might last three months, is therefore substantially lower than that of a console game for Playstation 3 which could take two years to complete. A game project typically involves a Creative Director, a Technical Director and a Development Director. The size of the team for a mobile game project can be approximately 10 employees while that of a console game can be 50 employees. The difference between larger and smaller firms in the industry is therefore about the total number of teams and the size of teams in the firms.

The production of games software consists of a chain of activities as shown in Exhibit 2. The different functions of each stage of the value chain imply that there is a

variation of cost drivers along the value chain. The activity that incurs the highest costs within the value chain is product development. The relative importance of these activities can be illustrated with the example of the Playstation 3 console game, which will require at least US$10 million to produce. Hence, the development cost for a global hit title with sales of 2 million units and generated revenues of US$40 million would be 25 per cent of its total revenues. During the games production process, the opportunities for cost reduction include: 1. Improve production efficiency in programming work, 2. Outsource artistic work to low cost producers and 3. Outsource specific elements of programming work to micro firms or freelancers. Nevertheless, marketing costs have also increased steadily in the games industry as games publishing firms try to reach diversified market segments with new approaches.

Insert Exhibit 2 here

Original Work and Work for hire

Games development projects include the creation of original games that allow firms to exploit their intellectual property rights; Pokemon, Sonic the Hedgehog and Lara Croft represent original characters that became global icons whereas the story line of Grand Theft Auto is well known among adult gamers across countries. The financial rewards for developing original games not only include royalties derived from the sales of the games but also the sales of film rights, comics, toys etc. Most importantly, these intellectual properties increase the financial value of the firms.

Most games development firms engage in projects on a work for hire basis; in other words, games publishers provide them with contracts to work on certain projects. Though leading games publishing firms are multinational firms that have internal

production facilities, they tend to concurrently source from internal development teams and external development firms. One of the arguments for using external firms is their expertise. Indeed, with the increasing emphasis of hit titles or games that could sell several million units worldwide, publishers are all very active in their search of talented firms who might develop the next global hits.

The projects in relation to work for hire include format conversion, licensed games, build to order and outsourcing work. Format conversion involves converting games from the lead formats such as Playstation to Xbox and Nintendo consoles using arts, sound, music and codes that have already been created; games development firms, therefore, could usually estimate the cost and duration of the work quite accurately. In addition, games publishers that have secured movie, TV show, sports or book licenses might utilize external teams to develop the games. Games publishers could also engage in most of the creative ideas and request build-to-order projects; they could select development firms by putting out tenders for them to bid. Finally, games publishers' internal studios might also recruit help from external firms to help with deadlines; in such cases, they would pay a daily rate for each person working on their premises. Overall, games development firms do not create their own intellectual properties when they engage in work for hire; this type of work is nevertheless attractive since it is less risky and generates a steady income stream for those who can secure contracts continuously.

Payment Model

The typical pricing model used by games development firms concerning work for hire is the cost plus pricing. In other words, the games publishers will be charged for the estimated total costs of projects such as support, overhead, management, benefits, hiring,

equipment, insurance and legal costs. The total number of work days will be the basis for calculating the total costs and the profit margins will be included. If the projects are original work, royalty rates will also be agreed between the publishers and the development firms.

Due to the fact that the production cycle of games software can be as long as a couple of years; games publishers will pay development firms up-front at the end of various agreed milestones in conjunction with concept approval, alpha, beta and master stage. They also assign Producers and Brand Managers to oversee the production of games projects after concept approval. At the end of each milestone, the development firm will submit the relevant work to the games publishers. The publishers will authorize payment for the milestones if they approve the work using subjective criteria; most contracts will also specify a remedy period if the publishers reject the submitted work. The majority of the payment incurred in contracts is paid where everything is basically in the game (i.e. the milestone in relation to the alpha stage). Nevertheless, a lot of games projects are terminated at the green light process (or in-line 3) within the concept approval stage. The cost of development means that games publishers have a very strict process to handle concept approval.

Hope-Ross and Grace (2006) explicitly acknowledged that payment timing could make a significant effect on cash flow within the software industry; more specifically, late payments can yield the best float by delaying funds withdrawal, but at the expense of lower discounts and possible penalties. It suggested that in order to maximize cash flow, firms should delay payment for high cost procurement with little or no discount in early payment. Indeed, multinational publishing firms practice strategic cash management and

adopt accounting practice to pay games development firms 30 or 45 days after receiving invoices. The implication for development firms is that cash flow is far more important than profits as firms that cannot manage their finances will not be able to survive.

Market Consolidation

The UK, together with the USA and Japan are not only the leading development bases for games software, they are also major markets for games since the inception of the industry. The total sales value of different types of games software formats in the UK were approximately US$1.7 billion in 2007 (Gibson 2008). Though the total sales revenues generated by the UK games software industry has already exceeded other leading entertainment industries such as films, the UK government has undervalued the contribution of this emerging sector to the extent that there was no industry code assigned to games development activities.

The growing demand for software games titles during the 1980s and the 1990s led to the increase in the number of development firms in the UK; however, the focus on hit titles and games publishers' backward integration into games development have led to a reduction in the number of games projects available. Consolidation in the UK games development sectors can be seen in the closure of financially unsuccessful firms and the acquisition of the successful ones. Nevertheless, the small and medium-sized games development firms that have survived the recent consolidation in the industry are competitive in the sense that they are responsive to evolving market conditions and are regarded as capable to delivering projects on time, within budget as well as attaining world-class quality levels.

Culture, Survival and Games Development

Though firm culture is a widely discussed concept, there is a lack of consensus on its definition. For example, theorists such as Wilkin and Ouchi (1983) as well as Meek (1988) examined firm culture as something a firm *is* whereas Handy (1993) as well as Cooke and Szumal (1993) considered it as something a firm *has*. By treating firm culture as a variable (like capital or information technology), the latter theorists argued that firm culture could influence key performance measures such as financial performance, the pace of change, employee retention and the adoption of new technology.

Typologies concerning firm culture within the literature includes Harrison (1972), Ouchi (1981), Peters and Waterman (1982), Deal and Kennedy (1982), Quinn and Rohrbaugh (1983) as well as Trice and Beyer (1984). For instance, Ouchi (op. cit.) observed that Japanese firms' cultural features such as long-term orientation provided powerful explanation for their success in the post-Second World War global economy. Quinn and Rohrbaugh's Competing Values Model (op. cit.) examined the focus of flexibility/change versus the focus of control/stability as well as the extent of internal, person-oriented emphasis versus external, firm-oriented emphasis within firms. Adopting this model, Cameron and Ettington (1988) described four types of firm culture: group culture (flexibility/change and internal/people oriented), the developmental culture (flexibility/change and external/firm oriented), the hierarchical culture (stability/control and internal/people oriented) and rational culture (stability/control and external/firm oriented). These are some of the notable work in relation to firm culture typologies; however, it should be noted that they have assumed the universal application of these typologies across different industries.

Not contending with the conceptualization of firm culture as typology, Schein (1984) proposed a process approach that examined the continuous re-creation of culture with a three levels model. According to this cultural model, the surface level of firm culture relates to artifacts, which are the visible aspects such as structures, practices, technology and language. For instance, culture at the surface level can be represented by the types of people or technology employed within the firms. The middle layer of firm culture encompasses espoused values; they are manifested as philosophies and objectives. Espoused values represent what 'ought to be', and are therefore different to the reality of 'what is'. They provide rationalization for the artifacts; they can be, for instance, profit maximization for shareholders or solving human problems through the application of technology. Espoused values can be discerned because they are the beliefs among managers and therefore can be communicated; however, the interpretation of values, to a certain extent, lacks objectivity. The deepest level of firm culture consists of basic underlying assumptions regarding relationship to environment, nature of human relationships… etc. They are unarticulated and are the source of espoused values which subsequently shape the artifacts. Examples of basic underlying assumptions within the firm culture include the sense of responsibility and obligation to others and the importance of individual responsibility. Schein (ibid.) explained their significance when defining the concept of culture: culture is 'the *pattern of basic assumptions* that a *given group* has *invented, discovered, or developed in learning to cope* with its problems of *external adaptation and internal integration*, and that have *worked well enough to be considered valid*, and, therefore, to be *taught to new members* as the correct way to *perceive, think, and feel* in relation to those problems.' (p.3).

There is also an acknowledgement in management literature that firm cultures are critical for the performance of firms. The strategic importance of firm culture was identified by Barney (1986); he pointed out that culture (which was rare, valuable and imperfectly imitable) could be seen as a firm resource. The work of Peters and Waterman (op cit.) as well as Deal and Kennedy (op cit.), on the other hand, elaborated the impact of firm culture on performance. The former argued persuasively that strong culture was the medium for developing excellent firm performance while the latter illustrated the economic values of different cultural types. Ouchi's (op cit.) Theory Z, on the other hand, described the unique culture among Japanese firms that could promote stable employment, high productivity as well as high employee morale. The well cited studies by Kotter and Heskett (1992) highlighted the intriguing relationship between firm culture and external environment. They found that firm performance improved significantly where firm culture supported firms' adaptation to the environment; however, when it did not support adaptation, cultural strength could become a liability and interfere with performance. This stream of work further stimulated a substantial amount of research looking at the practical functions of firm culture (e.g. Sparrow 2001, Wilderom et al. 2000); in particularly, researchers are interested in the impacts of different firm cultures, which include bureaucratic culture, performance culture, innovative culture, entrepreneurial culture, anti-corrupt culture… etc.

Salaman and Storey (2002) wrote that innovation was considered by theorists to be critical for organizational competitiveness and survival. Indeed, innovation is particularly important in technology-driven, knowledge-based interactive entertainment industries such as games development; it underlies the success of firms in launching

global hit titles and justifies their existence and subsequent growth. Schumpeter (1936) suggested the role of the innovation in terms of creative destruction in selecting the surviving firms within technology industries such as the 19th century textile industry. In his discussion of how textile firms generating surplus over costs with the adoption of mechanization, he explained that process innovation was a source of entrepreneurial profit; and wrote '… Only if the receipts exceed outlays after allowing for all three sets of changes is there a surplus over costs… However, they are obviously not always fulfilled, and when they are not, and the fact is foreseen, the new business is not organized; if this fact is not foreseen no surplus results but rather a loss' (ibid. p. 131). Innovation, however, incurs high costs in technology-based industries. The importance of cost minimization among technology firms has been highlighted by Narula (2003); he explained that 'The increasing cross-fertilization of technologies across disciplines and resultant broader portfolio of competences has become fundamental to the competitiveness of technology-based firms… R&D in new technologies has been seen to be increasingly capital-intensive. So, the need to reduce costs (and maintain profits), while maintaining the firm's technological assets has become an important managerial balancing act' (p. 40).

The previous section has illustrated the uniqueness of games development – it is an extremely competitive global industry that demands a limited pool of highly skilled craftsmanship in both conception and production. Unlike business software, functionality is not a key success factor in games software; a hit title in games basically needs to fulfill its entertainment purpose and be fun at the time of the release. The key features of external environment, which incorporate competition, uncertainty and change, is essential

in the understanding of firm culture. The unpredictable nature of games development coupled with its intensifying competition mean that survival in the industry requires cost minimization within the contextual background of innovative orientation.

Drawing from the theoretical conception of firm culture, innovation and firm survival, I propose that the culture of survival, which represents a culture where firms strives for cost efficiency, is detrimental to the continuity of business operations among innovation-oriented small and medium-sized firms within the games development sector of the interactive entertainment industry. The definition of small firm by the EU is a firm with fewer than 50 employees while that of medium firm is a firm with fewer than 250 employees. Firms survive when their total revenues are greater than total costs. Due to the dominance of games publishers in the industry value chain, the survival of development firms engaging in work for hire or original work is predominantly influenced by their ability to minimize costs, particularly the cost of production which contributes to approximately 80 per cent of their total costs. Another aspect of cost minimization is administrative cost in relation to cash flow, payment and finance, which is more significant as firm size increases. Finally, transaction cost also contributes to the overall cost structure. Transaction cost is the cost incurred in organizing production through the price mechanism, and includes costs in conjunction with legal contracts and monitoring quality and progress during production (Williamson 1985; Casson 1987). The ability to reduce transaction cost, which contributes to publishers' decision criteria for sustaining external development, therefore enhances the survival of firms.

Schein's cultural model, which discussed firm culture within the integration perspective (Martin 1992), will be used to illustrate the survival culture of UK games

development firms. As these firms are managed by founders, their influences on both tangible and intangible aspects of the firms provide the basis for unifying cultures (Pettigrew 1979; Schein 1983; Siehl 1985; Schneider 1987; Berson et al. 2005). The best practices in conjunction with the survival culture are derived from the management of human relation, alliance and finance, which are in turn supported by managerial beliefs drawn from the underling assumption of innovative product orientation. Existing literature has highlighted the importance of firm practices in human resource, finance and inter-firm relationship towards their survival. For example, it was found that the advantages of alliances included expanding markets, lower costs, enhancing innovation as well as increasing sales and profitability (e.g. Cannon and Homburg 2001; Rindfleisch and Moorman 2001; Palmatier et al. 2006). Moreover, Cappelli (2008) argued that 21st century firms should have abandoned human resource practice developed half a century ago and adopted new process designed for the volatile environment; such processes included balancing employee-employer interests, developing multi-task work force, bringing back investment from recruiting ex-employees (if possible) as well as hiring externally to make up for any shortfall in human resource. Finally, Zingales (1988), Fotopoulos and Louri (2000), Bunn and Redwood (2003), Nkurunziza (2005) pointed out that financial variables such as debt to assets ratio and leverage were associated with the probability of firms survival across developed and developing economies.

The espoused values which are manifested in managerial beliefs are the respect for human capital, the pursuit of emergent strategy and long term orientation. In his discussion of increasing returns in technology industries, Arthur (1996) provided a link between firms' basic assumption of innovative orientation and managers' beliefs on

human talents. He wrote that ‘Such people need free rein. The company’s future survival depends upon them. So they – and the commando teams that report to them in turn – will be treated not as employees but as equals in the business of the company’s success’ (ibid. p. 4). Arthur further justified the managerial beliefs of emergent strategy among high technology firms as: ‘Above all, the rewards go to the players who are first to make sense of the new games looming out of the technological fog, to see their shape, to cognize them.’ (ibid. p. 5). As for the managerial belief of long term orientation, Arthur asserted that high tech firms ‘needs to reinvent its purpose, its goals, its way of doing things… You cannot optimize in the casino of increasing-returns games. You can be smart. You can be cunning. You can position. You can observe. But when the games themselves are not even fully defined, you cannot optimize. What you *can* do is adapt’ (ibid.). `

Research Methodology

I conducted an exploratory study using concepts and theories in the existing literature to increase understanding of the cost advantage associated with the culture of survival. Primary data includes in-depth face-to-face interviews and firm publications. Twelve face-to-face interviews with surviving games development firms was the major form of primary data used. To identify the firms, several sources were used, including industry association data bases, industry publications and news articles. The sampled firms were selected using random sampling procedures from the compiled list; sixty firms were contacted via letter or email with a response rate of 20 per cent. The size of firm in terms of sales and employees as well as the technological profiles of firms in terms of ownership of intellectual properties across the respondents provided a snap-shot view of

the industry.

Respondents were typically founders holding key management positions. The interviews took place from October 2006 and December 2006, and were usually 60 minutes long with the shortest one lasting 40 minutes and the longest one 150 minutes. Data collection covered the growth of the firm from when it was founded until 2006. Semi-structured questionnaires guiding the interviews included questions designed to gather information on the founder's background, firm history, organization structure, firm strategy, nature of external relationships and critical events. All interviews were taped and transcribed. Several themes emerged as the number of interviews increased, which highlighted the cost advantages associated with the culture of survival as well as elaborating its underling assumptions, espoused values and artifacts.

In addition, face-to-face interviews were also conducted with four firms that closed down during the industry's consolidation period; their total number of employees ranged from 3 to 200. The main reasons for their inability to survive differed: the first one was due to the knock-on effect arising from the failure of a games publisher, the second one was related to inadequate technological capability, the third one was explained by the founder as his lack of understanding regarding the importance of resource acquisition in the new firm and the fourth one was due to negative cash flow arising from the cancellation of a major contract. To supplement the richness of the data, nine interviews were undertaken with games publishers and two interviews were conducted with games related firms. Overall, these interviews provided opportunities for the cross-examination of data derived from the interviews with surviving firms. Longitudinal secondary data which included government publications, industry reports and news articles were also

collected in this study. They provided useful background information regarding the evolution of the industry over time and the technological and marketing challenges facing firms.

Survival Culture and Cost Advantage

This section will utilize case study evidence to discuss the notion of survival culture. Exhibit 3 summarizes the findings of the research and illustrates how the culture of survival as driven by the underlying assumption of innovative product sustained the espoused values among firms, which shaped the artifacts and generated cost efficiency in the area of production, administration and market transaction. The twelve UK games development firms were established by individuals with life-long interest in the industry. They had either taken part in the conception of the industry or had exposure to the industry from an early age. Three of them were even involved in the production of games in their school days. Some of these firms were at the forefront of technology and were working on intellectual property in conjunction with the new generation games platforms such as Playstation 3. As seen in Exhibit 4, four of the case study firms are located in the games development hotspots in the UK comprising London, Brighton, Manchester and Dundee while the remaining firms are outside these areas. The age of the twelve firms vary; the youngest firm had survived for two years and six firms had survived more than eight years in the industry. The sales revenues of the twelve firms in 2006 ranged from US$0.5 million to nearly US$20 million.

Insert Exhibits 3 and 4 here

Developing an original game is the holy grail in the games software industry even

though most firms acknowledged that only a small number of games titles would be commercially successful. The assumption underlying the culture of the sampled firms converged on creating innovative and popular hit titles with which they could exploit property rights. The founders of Firm C, Firm E, Firm F, Firm G, Firm I and Firm K established their firms as they wanted to develop games which derived from their own ideas. Though some of the sampled firms were in terms of work for hire at the time of the interviews, they were inspired and determined to engage in the creation of original games in the future. The sentiment for original work can be seen in the comment by Firm G: 'We'd been working on some largish franchises, which we enjoyed, don't get me wrong, but we were one of thousands. Although the titles we were working on were number one selling hits, it just was kind of like right, this is somebody else's baby'. Firm I, who had just begun to develop its own products after working on contracted work for nearly 10 years, stated that: 'We do a bit of both now. If we can create all our own content then we will live or die on our quality and that is the idea… We have lots of good ideas we just don't get the chance to do them, so this year, over the course of the year we have gradually changed it so we can create some of our own things in our own style… If our games are rubbish, we don't make any money.' However, the sampled firms also concurred that they would only proceed with original games when they could afford them, which reflected the basic reality for surviving in the industry.

The espoused values of respecting human capital, emergent strategy and long-term orientation that were drawn from the underlying innovative product orientation, were subscribed by the 12 games software firms. These values provided justification for adopting practices in human resource and finance. The belief on respecting technical

talents was prevalent among all case study firms. For instance, Firm E regarded members of its core team as ‘experts in their areas’. Firm D also commented that ‘we try and find very very smart people and you know we try and lock them into the company as much as we possibly can and get them in there and invest in them as much as we can and get them to give as much of themselves as we can…’. In discussing a long-term view on the emergent strategy of creating intellectual property rights, Firm B stated that ‘we will look at doing our own IP at a fairly modest scale to start with so it’s not bet the whole company on this. IP is going to be wonderful so we’ll work out ways to do small well-defined products which we can afford to do and risk; and if they work then something will start to build and snowball from that and if they don’t, it’s fine. We still have other stream of work to continue. Firm H illustrated the managerial belief in emergent strategy with the example of changing business model. ‘… some companies have a mission of growing business, IPOing and just get bigger… Five years ago, we thought that it’s what we would do but I have changed my idea now. What I would like to do with the business was to grow it for 2 or 3 years then sell it’. Further evidence from the data presenting the quotes drawn from firm interviews characterizing the underlying assumption and espoused values are highlighted in Exhibits 5 and 6 respectively.

Insert Exhibits 5 and 6 here

I will now provide further detail on firm practices that were derived from the unstructured interviews to illustrate cost efficiency in aspects of production, transaction and administration among games software development.

Human Relations Focus

As games development is a very labor-intensive economic activity, good human resource management practice enhances productive efficiency and creates significant cost based competitive advantage which enhances the survival ability of a firm. All the firms in the case study created not just a place to work, but also a lifestyle that built on the passions of the founders. They leveraged on good management of human capital to minimize their production costs. Indeed, one of them had undertaken a benchmarking exercise which revealed that its cost of production was two times less than that incurred in a similar project within a multinational firm in the UK. There are five areas in conjunction with human capital that contribute to productive efficiency: the reliance on a core team, the recruitment of the best people, the provision of interesting job, the balance of work and life as well as the stability of the workforce.

Firms A, B, D, E, F, G, I and J relied on core teams and outsourced less critical work to other firms or freelance employees to achieve flexibility. Core teams include employees that are the most valuable for games production, which includes the Technical, Creative and Development Directors as well as the core programming employees and artists. The outsourcing of artistic work has been a recent phenomenon in the games development industry where firms in India, Eastern Europe and China have been able to provide high standard artwork with low costs. In addition, there is an abundant supply of freelance artists that can work at the sampled firms' premises at hourly rates. Most firms maintained a small team of artists and outsourced various amount of artwork. They were able to achieve high quality standards with accumulated industry knowledge and a clear communication strategy. For instance, Firm B which employed two artists and outsourced almost all its artwork stated that: 'Generally, we try and work with people we know and

we have experience of because that's also the way we ensure we get what we want…You need to give them good examples of the work: if it meets this standard we accept it, if it doesn't we don't; so nobody's giving us a surprise that we don't like.' Other firms such as Firm D appointed freelance artists for temporary work. The rationale as explained by its founder: 'We basically employ freelancers that we know who come and work in-house. We do allow them to work occasionally out-of house but when we do it's all on piece work. So, it's easy for us to control their performance and if their performance isn't good then it costs them money… we've got systems set up that enables us to pay for productivity.'

The outsourcing of programming work was also practiced by some firms in the case study. As Firm G explained: 'because we understand fundamentally how to make games probably better than an awful lot of people, we were actually able to just simply ask for very specific things even in terms of programming from smaller teams…' Firm F, who utilized the services of freelance programmers, stated that: 'we use freelancers I knew from the games industry, we knew their work was good who were competent programmers. And they have to learn how to do the Java thing. We actually developed a, like an engine, a Java games engine internally which makes it a lot easier to learn, because you didn't have to learn all the intricacies of how to set up an application or draw to the screen in Java. So we set up the environment when the programmer can just write the game logic which is similar to writing in any language and then the drawing routine to draw things on to the screen we have spread functions to do that...' Others, such as Firm I, mentioned that it repeatedly used the services of a micro firm 50 miles away from its office as well as a freelancer in Europe (who was an ex-employee) to provide

programming work when needed. The emphasis on core teams among the sampled firms corresponds with findings by Faraj and Sproull (2000) in the coordination of software development teams, which states that it was the expertise in coordination in terms of knowing where expertise is located, knowing where expertise is needed and bringing needed expertise to bear rather than the mere presence of experts in development teams that generate performance.

Hiring the best employees is also a recurring theme among all the case study firms, who not only used various testing methods, but were also willing to let go inefficient programming employees. Most of them provided program tests to new graduates while one gave them projects to complete at home; this firm added that the project work was a very good selection method and it would not recruit those who could not undertake them. Firm J which utilized programming tests and a six months probationary period continuously monitored the performance of employees. Firm I put it simply that due to its small size, it could not make mistake in recruitment. Firm B elaborated that the advantage of having only the best programmers is that other programmers 'are not carrying people with any kind of a waste of time… if there are people who are working 10 to 12 hours to deliver what other people can do in 7 than actually we sit them down and say look you might be surviving by working 50% more than the other guys but six months a year's time that's going to tell on you… so either work out how to do it in 7 or 8 hours or you are probably in the wrong job.'

Maintaining an interesting job was a practice that led to production efficiency. Psychologists since Abraham Maslow and Frederick Hertzberg have long advocated the intrinsic value of work while the idea of work as one's deeply embedded life interest as

key to productivity has more recently been suggested by Butler and Waldroop (1999). As Firm A pointed out: ‘in this industry a lot of people are self-motivated anyway… so people just want to do the best they can because at the end of the day consumers are going to buy what we came out with and there is nothing worse than you put your game out there and you get all sort of things in the internet and the press saying your game was awful’. Firm I explained its ethos as follows: ‘If you are at a big company, you tend to go into a big room and it's full of people with their headphones on and you are a little cog in a very big project so you don’t get much of a say’; as a contrast, ‘each programmer has his own project here, some programmers have two projects, which is a lot, it is hard, they don’t have horrible tight deadlines on them...’ The manager of Firm J, who previously worked in a multinational firm, found himself more satisfied with his career at the time of the interview since he had more control of his destiny. Firm B described the potential for individuals to initialize new projects in this way: ‘It’s a small company so everybody is thinking about it, but specific people are more prolific and more focused on ideas than others.’

Despite the controversy about long working hours in the US headquarters and UK subsidiaries of multinational firm Electronic Arts, the theme of work-life balance is shared by all firms in the case study. Though they required employees to work longer hours (if necessary) to meet deadlines, they made sure employees took some time off afterwards. In an extreme case, Firm J required a team to work 9 hours a day for 3 or 4 weeks to meet a major deadline. However, it was concerned about burn out and made sure its employees had extra holidays to recover afterwards. Firm D also used a similar approach and had some periods of extended work hours; for instance, it could be a couple

of weeks within a three month long project and six weeks within a nine month long project. Firm D was also considerate about employees and stated that, ‘we always try to make sure there’s at least one day at the weekend they’re not working at all and not thinking about the company at all.’ As for work hours, Firm I not only used flexible hours but also allowed its employees to work at home: ‘Our start time is 10 o’clock and people can arrange to come in before or after if they want, our finish time is between 5 and 6 but people can leave before or after. We let people work at home quite a lot as long as the project is done. Most people here work at home at least one day a week.’

In addition, all the firms have social events. For Firm B: ‘we’ll do things like at key points of the project we’ll go out and have dinner or kind of go for drinks… if people want to do more of the serious kind of, let’s go and do something fun today you know let’s go and enjoy ourselves as a bit of reward.’ Firm A, Firm C and Firm G also thought that families were important for the experienced employees in the industry. Firm A stated the average age of programmers was mid-20s some ten years ago, ‘so on Friday evening we would all just get heavily drunk and go home. But nowadays a lot of staff are going home to their families rather than going out for drinks. We do have social events: we have barbeques and quiz nights; we have our Christmas parties and our little meals.’ Indeed, the advantage of providing a balance between personal and work life has been much discussed during the past few years and is generally viewed as an effective approach in the knowledge-based sector.

Finally, the stability of programming employees also contributed to production efficiency among all firms. Even though some of them were outside the major clusters of game professionals, they shared the common attribute of low annual turnover among

programming employees. As Firm D pointed out: '… we just make a very nice working environment and we give people some benefits, pensions and BUPA and good holidays and all that... and have big social type activities that go on in the company, everything from karting to paintballing to whatever… It's all the usual things companies do. Plus we try to promote very sensible working hours… Yes, at certain times of projects, unusual hours are required and, yes, we do require them to do that but we try to be flexible enough when people have to give a lot of themselves and they do at times have to do that, then we try to accommodate them in other ways to make sure that that works well. That's to give them time, be more flexible and so on and so forth'. To a great extent, the stability of workforce is intermingled with the emphasis on work-life balance. As the core employees of the games industry are mainly in their thirties, all sampled firms understand individual needs at that stage of life. As Firm C recalled, his colleagues tended to have pictures of cars on the walls when he started in the industry, then they replaced them with pictures of their partners and now some even had pictures of their children. Firm C also pointed out that reasons for leaving the firm were mainly personal such as relocating closer to the partner or the parents. Firm A echoed the view on the importance of family life: '..when I started out I was 23, 24 at the time and the average age in the industry was mid 20s, so on Friday evening we would all go out to a pub and we would all just get heavily drunk and go home. But nowadays a lot of staff are going home to their families rather than going out for drinks.'

Critical Relationship Building

The most critical external relationship among games development firms is the

relationship with games publishers who funded original projects or provided contracts for specific development work such as format conversion. The case study firms not only utilized their production efficiency to provide competitive prices; they also demonstrated procedural flexibility with chosen publishers to lower their transaction costs. In addition, they acknowledged the importance of good value for money. As Firm B explained: 'We're selling experience and ability, which isn't necessarily unique, there are a lot of people out there with it but there are far more who don't have, who just trade on enthusiasm and price… We're not going to quote a silly number because we want people to pay us over the top but we have a fairly strict model set out, that's how much it's cost, here's the margin we need to make'. The firms in the case study also evaluated publishers with selected criteria, which were associated with firm size and business practices. For example, Firm A stated it would not build a business relationship with a certain publisher even though it offered the firm a contract worth million pounds. Firm C also mentioned its criteria in choosing the publisher to work with as its level of resource commitment and reputation.

As games publishers' financial decisions concerning developing games internally or externally are influenced by the prices they pay for the development work as well as the cost incurred in the transaction, three practices adopted by the firms in the case study that lower the transaction costs contribute towards the maintenance of relations. First, some embarked on new projects prior to the finalizing of the contracts with publishers. The reason that these firms accepted letters of intent or memorandums of understanding was that they valued the creditability of the publishers they worked with and the practice allowed them to deliver the product to publishers on time. Second, the firms in the case

study work closely with the publishers' producers and would allow them to stay at their premises (if necessary) to reduce their transaction costs associated with monitoring and quality control. As development costs increased with the technological trajectory in the games industry, some games publishers tried to monitor the transaction closely. Firm I explained the rationale for this: 'If you're doing a project for an American company and its got a reasonable license attached, they always get worried… game production is a very hard process to schedule but even if you are on time, they always get worried, or the licenser always gets worried so they tend to send a producer over to sit with you for a week or even for a day to make sure you really are sitting working. It's just the way it works'. Since the market is constantly evolving, the firms in the case study also tried to incorporate Publisher Producers' ideas into the development process. As Firm G stated: 'you can have anything you want, so long as you provide the appropriate length of time for it to be implemented and the appropriate budget to add to it.' However, this proves to be more controversial. Since the payment for any project is determined in advance, work involving extra work days might not be compensated. The way Firm G handled this was: 'I accept that I've worked more hours this week than I've been paid for. That's how it works, it's really grim but we could go and do something else but we don't. There's something… we're addicted I think.'

Focusing on Cash Flow

The common features shared by all the firms in the case study was that they put great emphasis on cash flow and cash reserves; most of them were able to use retained profits to finance their growth over the years. For example, Firm D which began with 4 members

in 2001 and had grown to 30 members by 2006 stated that growth had been through self-finance. One of the co-founders said: ‘That doesn’t mean that we’re rich men or anything like that!... We only grew as we grew the franchises that we supported, so a new franchise, a new revenue stream, it correctly enables us to grow and there is always a bit of down time in between and you use some of that down time to be sure of what we’re doing in the future years. But also to build, to broaden, the number of franchises, the number of platforms, the areas where we could work.’ Similarly, the founder of Firm I (which had survived in the industry for 10 years) mentioned: ‘I’ve never had any investors until quite recently. We’ve only done it recently because we wanted to go to our own products that weren’t commissioned by someone else and that needs £150,000 so we had to do that with loans and self investment.’

Games publishers’ strategic cash flow management via late payment means that the firms in the case study encountered high administrative costs when pursuing their debtors. Firm I concurred with this point and stated that, ‘sometimes we have to fight very hard to get paid… for a small company, it can be very difficult. It’s probably one of the most difficult things, getting the money off… at a reasonable timescale.’ It also recalled some bad experience: ‘You might be owed a lot of money but in reality you might never get paid that because a company might go under or just decide not to pay you. We have had that happen with quite big companies, they just decide they don’t want to pay you and they just tell you that you have to go to court or put the solicitors on to them. It’s very bad but unfortunately, it’s bad business practices, but it happens in all industries including computer games.’

Nevertheless, entrepreneurial owner-managers of some firms in the case study

resorted to receiving below market rate salaries in critical situations to improve the cash flow of the firms, which enabled them to lower the administrative costs. The co-founders of Firm C, for example, received £250,000 in salaries in 2004 but about £100,000 in 2005. Furthermore, some founders even absorbed short-term losses to generate cash flow. Firm F survived as a start-up firm on the basis of its three founders not receiving any salaries for the first 18 months. One of its co-founders explained how he used his personal savings to create the firm in 2000: 'I was freelance for about two and a half years. I have been working for most of the time for different people and it's quite well paid. So, I have lots of savings done from that and I set up the business using that money'. He further said that the setting up of a business and engaging in something one enjoyed was 'a passion' for his counterparts, he elaborated that it was similar to those who spent a lot of money on their cars or hobbies. He further pointed out the difference between working as an employee and running a business as follows: 'some people prefer the security and stability while others prefer creative freedom or financial freedom or just a bit more at the edge, and say well you know this is a risk but let's go for it anyway'. The founder of Firm G also explicitly said: 'no one is forcing us to choose this path and make video games for a living so, therefore, if you chose to, then its kind of a privilege.' He further elaborated the difference in working for someone and running his own firm, '… working for a bigger development firm, it seems less scary. Because it seems more stable, because someone else pays your wage. You don't see what the accounts look like…'

Evidence from the case studies above, therefore, unearthed various layers of the culture of survival. It shows that the twelve firms' abilities to survive were derived from

their human resource practices that enable them to compete with low production costs, flexible work practices that maintain their critical relationships with games publishing firms and lower their transaction costs as well as the willingness of entrepreneurial founders to absorb short term financial losses to reduce the administration costs generated by games publishing firms' strategic payment.

Discussion

Recent studies on firm survival have focused on the advantages of age, scale, scope and innovation that enable firms to continue their operations; in contrast to these studies, the present study explores the role of firm culture and, therefore, makes a significant contribution to extending our understanding of survival. Moreover, by focusing on a competitive, UK knowledge-intensive industry, this study reveals the factors affecting surviving firms operating on the forefront of information, communication and music technology within free market institutions. It reiterates that competition among knowledge firms are intertwined with intangible, firm-specific resource. Building on the existing literature on firm culture, I propose a typology of survival culture that is prevalent among small and medium-sized firms in competitive industries where profit margins are tight. Case studies of the twelve games development firms illustrated that the culture of survival, which was ultimately driven by innovative product orientation, yielded cost advantages through firm practices focusing on human capital, customer relationship and cash flow.

The uncovering of the survival culture also has practical implications. In terms of employee recruitment, it is important for independent games development firms to attract

recruits that are inclined to innovativeness by emphasizing the vision of the firm even though it might only be offering work for hire at the time and are in the process of building up their resources for product innovation. Interestingly, one UK game development firm that was keen to create its own intellectual property recently advertised for programmers by stating that it was a place for those who ‘want to get a game released before you die’.

Existing literature on creativity tends to emphasize the importance of supportive firm environment; yet the study shows that surviving firms were able to undertake creative tasks within various market constraints, discipline and pressure. Another observation was that some firms in the case study had strong regional affiliations and were endeavoring to maintain the reputation of games development in the region. In the wider context, there was also a sense of community bounded by personal and professional interests in games software development and the willingness to see further prosperity in the sector that fueled continuous improvement and development as a whole. Overall, it reinforced the findings that a genuine passion for games development served as a powerful motivational force that continuously sustained the work of independent firms in some regions and the UK. As programming skills required for games development are easily transferable to other industries such as business software or other areas of information technology, the fact that games development has attracted individuals with life long interests in games provide strong support for the importance of intrinsic values one can obtain from work. Indeed, games development professionals can be conceived as a self-selective group, which are closely linked with formal and informal networks.

Conclusion

Using a single industry setting of games development, this paper shows the competitive advantages of independent UK games development firms within a global industry that has been increasingly dominated by large multinational firms. It also illustrates how firms resolve the strategy tension of creativity and financial stability, which is critical for surviving in the industry. The findings provide insight into the underlying capabilities in conjunction with the survival culture and, therefore, extend our understanding of the theoretical and empirical groundings of this unique firm culture. In addition, it illustrates the importance of the intangible resources of human capital and external networks for firm survival. The former sheds lights on the design, management and stability of project teams in the firm environment and how it contributes towards a high level of productivity. As the optimal size of even the most complex games project team is less than 100 people, the production cost efficiency of the firms in the case study, therefore, questions the rationale for establishing a large development facility within a single site. It should also be noted that, one of the most productive facilities owned by Sony, its Liverpool studio, has about 100 employees and is the size of a medium-sized firm.

Finally, as some 70 per cent of firms in the UK are small and medium-sized firms, the findings therefore shed light on the unique survival abilities of knowledge firms among this firm population. In the context of games software development, the most critical issue facing firms already operating on a very lean cost structure is that multinational games publishers' project developments in the UK are relatively insignificant despite the size of the UK market. As games publishing firms increasingly

choose to work with firms in close geographical proximity to lower the transaction costs regarding the difficulty of coordinating and monitoring the complex games development process where the budget can be some US$15 million, UK firms would find it more difficult to compete with games development firms in other localities. As one industry observer pointed out, in the past few years most US West Coast games publishers between LA and San Francisco wanted to work with firms less than an hour away from them (if possible) for ease of communication. This therefore raises the question whether UK firms will be able to survive in the long run with the challenge from their US competitors as well as the new competitions from emerging localities.

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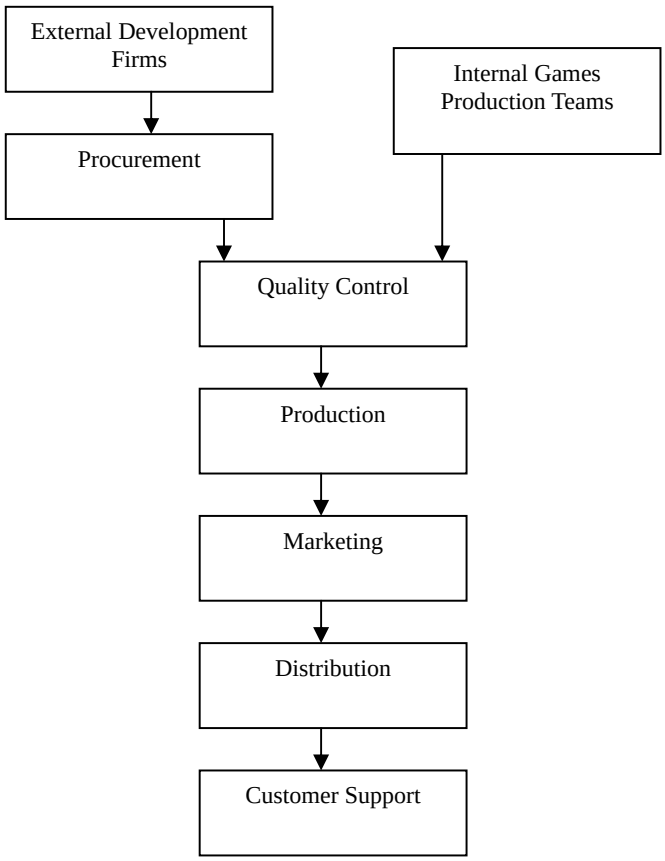
Exhibit 1: Leading Games Development Firms, 2006

Leading Multinational Firms	2004 Sales (million)	Leading UK Independent Firms	2006 Sales (million)
Sony	$71,390	Traveller's Tales	$52
Microsoft	$36,835	Relentless Studios	$28
Vivendi Universal	$26,785	Codemasters	$18
Nintendo	$4,899	Climax	$16
Sega Sammy	$4,214	Team17	$16
Electronic Arts	$2,957	Bizarre Creations	$16
Konami	$2,604	Kuju Entertainment	$12
Namco	$1,644	Eurocom Entertainment	$11
Take-Two Interactive	$1,127	Exient	$11

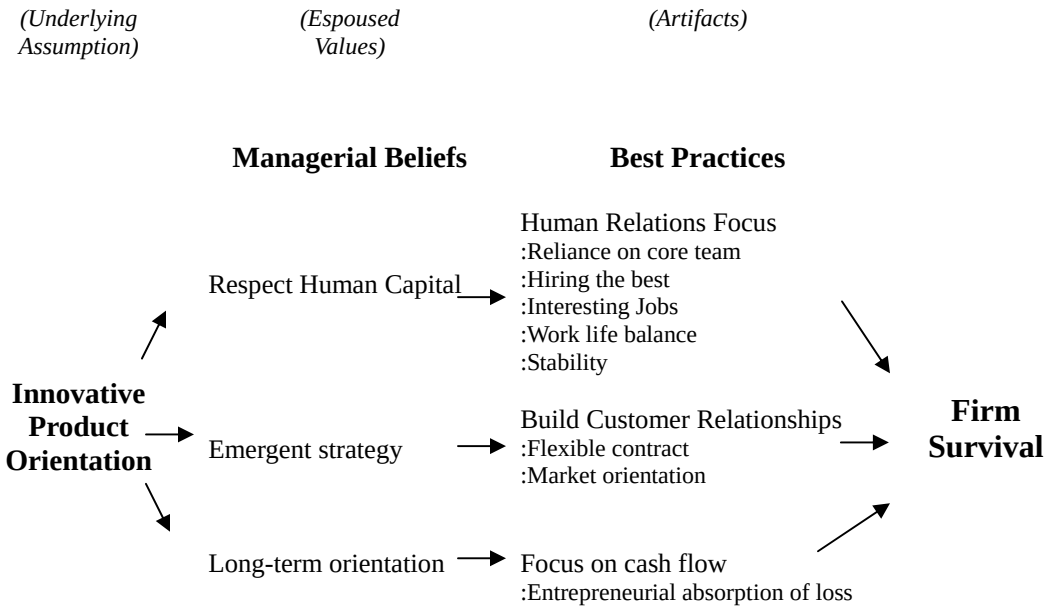
Source: DFC Intelligence (28 February 2005) and Develop 100 (2007).

Exhibit 2: Value Chain of a Games Development and Publishing Firm



Source: Author.

Exhibit 3: Survival Culture and Games Software Firms



Source: Author.

Exhibit 4: Characteristics of the Survival Firms

	Firm Size	Hotspot Location	Ownership of IP	Founders' Prior Industry Experience	Founders with University Education	Founders with Prior Games Business
Firm A	Small	Yes	No	Yes	No	No
Firm B	Small	Yes	No	Yes	Yes	Yes
Firm C	Medium	No	Yes	Yes	No	No
Firm D	Small	No	No	Yes	Yes	Yes
Firm E	Small	No	Yes	Yes	No	Yes
Firm F	Small	No	Yes	No	Yes	No
Firm G	Small	No	Yes	Yes	No	No
Firm H	Medium	No	Yes	Yes	No	No
Firm I	Small	No	Yes	No	Yes	No
Firm J	Medium	Yes	Yes	No	No	No
Firm K	Large	No	Yes	No	No	No
Firm L	Medium	Yes	Yes	No	No	No

Source: Author.

Exhibit 5: Innovative Product Orientation

Firms that have undertaken original work	Firms with aspiration to undertake original work
All I actually want to do is writing our own titles and writing and selling them as an independent developer and have a reputation for being a good quality independent developer.	If one looks at the industry it is difficult to take new franchises… There are very few firms who have done that in the past five years or so… We will look at doing our own IP but probably at a fairly modest scale to start with so it's not going to bet the whole company on this IP…
We set out to create games that are not like the games that other people make basically.	Our most important clients are our current clients. If we can make sure that we provide quality work to those guys then they will come back and ask us for more but we are still very keen to work on our own concepts, on our own properties and develop those as much as we can.
I didn't have much of a business sense when we first set up. I didn't really think okay the plan is to build a company for the next three years and then sell it… it's just you know I love make games and that's what I was doing… We set up to make great products.	Technology is big investment in the company, it's a continue investment for the company. We build technology on top of technology on a fairly regular basis and when technologists are not being used to make a game we are using them to create new opportunities for perhaps to support a new console or evolving technology that we've got.

Source: Author.

Exhibit 6: Espoused Values deriving from Innovative Product Orientation

Respect Human Capital	Pursuit of Emergent Strategy	Long-Term Orientation
The development teams get rewarded on royalties… because they're a rare breed. There are not enough of them. We've got team work… As projects come to completion these guys work very very hard and work incredibly long hours to deliver the product. The reason that having programmers as a core part of the team, permanent members of the team is that the investment they put in learning our software, and the investment we put into having them do that, is not something that we really want for them to walk away and go and work somewhere else.	We have a general road map that we would like to follow but we also understand that that kind of road map will be subjected to change depending on market conditions, how the company is performing, and things like that. I think we're in time-based entertainment and I think if you're in time-based entertainment, you need to be very responsive. The Publisher we had tried to channel that and make it into a Sims clone, and it was never intended to be the Sims... So we struggled with and we had this other game which had been the one we'd started the company with in 1998. And it had gone to a publisher and they went bust… My father's in property development business and during times of recession he would do anything… He spent a lot of time treating dry rot that kind of thing. So we had to do something similar but in the video game sense. What's this? You need some cars built, OK, right, we'll model the cars. You want this done? Cool, we'll program that for you. Just to sort of survive.	We laid out a road-map for the next five years… we harnessed the captive resources which were certainly world-class. We didn't raise any money…. We just re-invested the profits from the fees, so there's no external funding. I would hope that in five years time, we have globally successful products in the market place. I would hope that the technologies that we have developed are licensed out to hundreds of third party globally… that we have a solid balance sheet and we will probably have a wider management structure which include sales, marketing, accounting and licensing.

Source: Author.